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Group Problems of the Executive

With a Functional Classification of Occupational Groupings

By Lorine Pruette and Douglas Fryer, *University of Utah*

THE executive who has a large number of workers employed under his direction very soon finds, if he does not already know it, that there are natural groupings of workers according to the kind of task or the specialized job performed. Because of like functions group spirit develops and group consciousness. Barriers of attitude and habit, ways of doing things, will be erected between different groups, and if these are disregarded or made light of, dissatisfaction and antagonism of the workers may result. This is as true of the workers who are unorganized as it is of members of a labor union. The messenger of the New York Stock Exchange has a "family feeling" for his fellow messenger just as the carpenter has for other carpenters, and this same feeling is to be found among accountants, office clerks and other workers of the unorganized occupations.

MANIFESTATIONS OF GROUP CONSCIOUSNESS

This intangible group consciousness can be easily wounded. The personnel manager's problem is not merely one of dealing with persons in regard to hours, wages, satisfactions of work, etc., but also of dealing with persons in groups, feeling and acting in ways in which they would not act if the group were not there.

In one factory the factory building and the office building are on opposite sides of the street and when the factory girls appear on one side and office girls on the other the air is heavy with antagonism. Here is the question of group psychology, of the we-group and the other-group. This is not a new phenomenon; it is found among primitive tribes in the most isolated areas of the world just as it is found among the most civilized peoples.

TYPES OF GROUPINGS

Evidences of this group psychology appear in questions of the working together of different races or nationalities. A primitive tribe has been found calling itself "the men," as if members of no other tribe could be considered men. Irishmen look down upon Italians, white men upon black and yellow men. Group consciousness is accentuated by nearness to another group so that group conflict often arises.

Within any industry these group entities develop. They are like the cliques and fraternities of the school boy, except that they have a more

lasting basis. Nevertheless they have often not been recognized by the executive, particularly if the workers are not organized into unions and express their group unity in more subtle fashion. The skilled workman feels his superiority and unites with other skilled workers to confirm and increase this feeling. The brickmason is in a hierarchy above the hod carrier. Between the "white collar" class and the machine tender there is a gulf as wide and as deep as prejudice can make it.

OCCUPATIONAL GROUPINGS

The professions have been noted for their group feeling, for their professional ethics, their protection of members, but this is also characteristic of other occupations. Metal workers have a unity of feeling due to occupational function. Between carpenters there are strong bonds of association, as there are between painters or plumbers or masons. There is also a broader bond of cohesion between these latter crafts in that they are all construction workers. Individual workers form social groups because of their occupation and they move in a society determined by their occupation. They talk the slang of their group, they wear the clothes of their group, they eat what their group eats, they regard the boss as their group regards him, they are caught up and swept along, powerless, into the group solidarity.

To understand the problem of the groups with which he has to deal it is well for the executive to have some knowledge of the general field of the division of labor and of the various functional lines of cleavage which separate group from group. We are now living in a stage of complex division of labor, so vast that no one man can hope intimately to know more than a fraction of the field. More than twenty thousand gainful occupations are listed by the United States Census Bureau. The 1088 different workmen employed in the making of a watch indicate how intensive the division of labor and specialization within a field may become. If we want a thread to follow through the maze of occupations, we may choose the thread of production or the thread of function.

A FUNCTIONAL BASIS FOR CLASSIFICATION

For the executive to consider his workers under a classification of production alone may prove to be a serious error. The influence of such a classification leads to a tendency of dealing with personnel problems as with machinery, and of ignoring the human values, the emotions, the interests, the likes and dislikes which grow to so great an extent out of the closeness of the functional group and which serve to make the human factor the greatest industrial variable.

If we follow a classification based upon function, however, we follow the function of the individual worker, that function which brings him into contact with others doing the same thing that he is doing, receiving the same recognition and return, and which creates among them that strong bond of like-mindedness, due, psychologically speaking, to the constant repetition of stimuli common to them all and to the recurrence of similar reactions.

HOW THE CLASSIFICATION WAS WORKED OUT

In order to understand the relation of the particular groups in any industry to the stupendous organization of all occupations the attempt was made to build up an occupational classification relating only functional occupational groups on the basis of the occupational function of the individual. This work was done in an employment office in New York City. With the Census "Index to Occupations" as the guide for terminology and the United States Army "Trade Specifications and Index of Occupations" as a descriptive standard, the study was carried on through the personnel examinations given by the employment bureau during a period of two years. An exceptionally wide range of occupations was found to exist among the applicants to the bureau, the following percentages showing the distribution:

	Per cent
Professions	3
Commercial occupations:	
A. Mental work section	51
B. Manual work section	9
Maintenance occupations	18
Crafts	19

This wide range made possible the extension of the classification on the basis of information derived from the interview. The existence of group consciousness among the members of the larger occupational groups was checked by questionnaire information. The individual's qualifications were described and his occupation designated in the personnel examination.[1]

[1] Three thousand, nine hundred ninety-four examinations were given during the period of work April 1, 1920 to March 31, 1922.

Questions were asked to demonstrate the existence of occupational attitudes and tendencies of group consciousness, and the record was compared for verification of or addition to the classification in process of formation.

Thus a classification was built from the individual function up; individuals formed occupational groups and these groups outlined occupational fields. Each occupation listed by the Census was checked with this classification to see that they all fitted into proper groupings. Supplementary occupational information was derived from numerous minor sources in the attempt to understand the functional relationship between individuals in the same group and between occupational groups.

USES OF THE CLASSIFICATION

As soon as this functional classification seemed in satisfactory shape it was put into use by a large club for classification of members, by an employment agency for classification of applicants and by a personnel bureau employing workers in a variety of occupations. The personnel files are the heart of the personnel office, and their condition a reliable index of the efficiency of the work and the state of alive-ness of the personnel manager. For the personnel office the entire classification was made use of, cards of information of individuals being filed in their immediate occupational field under the larger classification of the general field to which the occupation belonged. For many offices the entire classification would not be necessary, except as offering a bird's-eye view of the complete field of our modern division of labor.

DETAILS OF THE CLASSIFICATION

There are distinguished in this classification four extensive fields of labor, i.e., professional labor, distributive labor, maintaining labor, and productive labor. These occupational fields are divided into thirty-seven main occupational groups with numerous sub-groups which cannot be given here. There were more than one hundred different occupations found in the clerical-executive group alone, and those included under the different craft groups are extremely numerous. The occupational fields and main groups are presented below with a list of occupations sufficient for explanation. Groups, sub-groups and individual occupations may be added to the classification without disturbing its organization. It has recognized several new occupational groups of distributive business lost sight of in the Census classification. The professional field has received development. Maintenance, including the work of the housewife, has been given its rightful place along with distribution and production.

Four per cent of all the workers employed in gainful occupations are estimated to be in the professions. The maintenance occupations engage 10 per cent and the crafts 65 per cent. The commercial occupations are divided into two distinct sections with their basis in occupational function. One section works largely with the mind, constituting the "white collar crowd" and having 14 per cent of all workers, and the other section is engaged largely in distribution work of a transportation and manual nature, composing 7 per cent of all those gainfully employed. This percentage distribution is, of course, approximate only.[2]

OCCUPATIONAL CLASSIFICATION

(Division of labor)

FUNCTIONAL GROUPINGS

PROFESSIONS

(Professional labor)

Religion—Including clergyman, priest, missionary, etc.

Medicine—Including physician, surgeon, medical specialist, pharmacist, nurse, etc.

Regulative Service—Including statesman, lawyer, civic officer, policeman, detective, soldier, sailor, etc.

Pedagogy—Including elementary and secondary school teacher, college professor, tutor, etc.

Arts—Including sculptor, painter, writer, composer, poet, etc.

Engineering—Including architect, engineer, draftsman, clothing designer, etc.

Personnel Work—Including personnel worker, vocationalist, social worker, recreational worker, resort proprietor, etc.

Entertaining—Including actor, showman, musician, athlete, pugilist, lecturer, etc.

Applied Sciences—Including physicist, philologist, chemist, psychologist, geologist, etc.

Pseudo Sciences—Including magician, spiritualist, gambler, astrologer, phrenologist, faith healer, etc.

COMMERCIAL OCCUPATIONS

(Distributive labor)

A. Mental work section

Publicity—Including advertising man, copy writer, publicity man, window decorator, etc.

[2] These figures are based upon the gainful occupational distribution. The married women and other non-gainfully employed women who are housewives (in all, possibly 60 per cent of all women) would, of course, add greatly to the maintenance field and cause a considerable percentage redistribution throughout. However, figures on this subject are not available.

Purchasing—Including buyers of raw materials, live stock, food products, merchandise, real estate, specialties, etc.

Sales (Promotion)—Including salesman of mechanical products, textiles, bonds, real estate, service, insurance, specialties, etc.

Trade (Order Filling)—Including banker, sales clerk of any retail products, merchandising man, etc.

Clerical-Executive Service—Including office clerk (general and specialized), credit man, secretary, secretary-stenographer, librarian, accountant, research worker, postal clerk, etc.

B. Manual work section

Highway Transport—Including chauffeur, auto mechanic, teamster, hostler, etc.

Rail Transport (Steam, Street, Elevated, Subway)—Including conductor, engineer, motorman, switchman, etc.

Marine Transport (River, Harbor, Coastwise, Ocean)—Including officer, engineer, seaman, canal attendant, longshoreman, boatman, etc.

Aero Transport—Including balloonist, aeroplane pilot, etc.

Wire Transport (Telephone, Telegraph, Wireless)—Including operator, messenger, inspector, etc.

MAINTENANCE OCCUPATIONS

(Maintaining labor)

Building Maintenance—Including building superintendent, porter, watchman, house worker, stableman, etc.

Mechanical Service—Including maintenance mechanic, motion picture operator, elevator operator, stationary engineer, handyman, loader, etc.

Personal Service—Including barber, masseur, laundry worker, governess, maid, guide, etc.

Culinary Service—Including caterer, baker, butcher, cook, scullion, waiter, etc.

CRAFTS

(Productive labor)

Construction (Buildings, Roads, Tunnels, Bridges, Cars, Railroads, Boats)—Including contractor, mason, carpenter, paper hanger, roofer, painter, structural iron worker, electrician, plumber, glazier, blacksmith, etc.

Manufacturing:

a. *Metals and Metal Products*—Including iron and steel worker, machinist, jeweler, aluminum worker, lead worker, etc.

b. *Wood Products*—Including wood worker, cork worker, musical instrument maker, upholsterer, rope maker, paper worker, etc.

c. *Pottery Products*—Including glass worker, brick worker, ivory worker, clay molder, artificial stone worker, etc.

d. *Chemical Products*—Including drug worker, fertilizer worker, paint worker, electricity worker, gas worker, dynamite worker, etc.

e. *Food Products*—Including sugar refiner grain miller, meat packer, fish curer, ice worker, cereal worker, tobacco worker, canner, etc.

f. *Textiles and Clothing Products*—Including furrier, textile worker, garment maker, shoe worker, carpet worker, artificial flower worker, knit goods worker, etc.

Farming—Including dairy farmer, sugar cane grower, tobacco grower, garden truck grower, turpentine farmer, florist, etc.

Animal Husbandry—Including cattleman, horse breeder, sheepman, poultry raiser, pet raiser, etc.

Fishing—Including beachman, clam digger, oyster fisherman, frog catcher, seal fisherman, whaler, etc.

Publishing—Including lithographer, etcher, photo-engraver, printer, bookbinder, etc.

Mining—Including coal miner, precious metal miner, iron miner, quarryman, oil miner, gas miner, etc.

Lumbering—Including forester, chopper, sawyer, flue tender, raftsman, driver, etc.

For the employer interested in defining the line of promotion for his prospective employee this classification has certain suggestions. An employee must receive advancement

along the lines of occupational function, if he is not to lose the benefit of previous training, and the occupational group, which he has entered, should be the one offering this advancement. The particular industry recognizing the existence of smaller social groups, as this classification shows in the large, could make valuable use of an intensive study of the factors within occupational function determining the recognition of occupational kind. For the executive who has only a few of these groups engaged under him, each with its group consciousness, group ideals and group demands, it is suggestive to consider in the large the field of operation of all the various occupational groups.

THE MUTUAL CONFIDENCE OF GROUPS

Consciousness of occupational kind breeds group feeling and group antagonism in particular instances, yet one of the most striking things about the division of labor is the immense amount of confidence upon which it is based. It is just by the irritation which the public shows to any class or group of workers which for the time being throws out of gear the social process that we may gauge the amount of confidence which has been all the time present, although unobserved, the confidence that things will continue as they are.

This confidence, so seldom thought of, so frequently unconscious until brought into prominence by some particular occurrence, is based upon the fundamental assumption of likeness between human beings. The sympathy based upon organic similarities, and strengthened by observance of behavioristic similarities, leads us to expect men to be actuated by like motives. In the division of labor this like motive has its source in the desire for a preferred, that is, a better way of living. We trust other men to continue their exertions to fulfill their functions because of the fundamental likeness which leads them all to have to so large a degree the same desires.

The new psychology emphasizes the value of bringing unconscious factors into consciousness. If the executive can bring to the front and emphasize this confidence which human beings have in each other he has gone a good distance toward lessening his group problems. Only by having confidence in the activities of workers whom we have never seen do any of us get the bread to meet our hunger, the clothes to cover our bodies, but it is unfortunately sometimes easier to feel this confidence in the other-groups which we have not seen than in the near-by groups whose minor differences from the ways of our own group may prove an irritant sufficient to distract the attention from fundamental similarities.

In many ways the present century is one of doubt and fear. Antagonism between various occupational groups seems to be growing, so that the problem of prevailing upon factory and office workers to join amicably in a dance, while this may have importance to the *esprit de corps* of the particular organization, becomes a minor one in comparison with those raised by the tendency of cleavage of groups along occupational lines. The landowner, the capitalist, the entrepreneur and

the laborer cannot long exist without each other, any more than an industry can run with its workers engaged solely in production and not at all in selling.

The continued and increased confidence, a confidence not blind and unconscious, but a confidence aware of the situation, offers a key to the solution of the problem of groups, whether on small or large scale, in the recognition of the necessity of various functions and in the development of adequate safeguards to prevent the violation or neglect of function by any particular group. Organization into groups, with group consciousness, group sensitivity, group interest and ideals cannot be prevented, nor does the influence of the group in shaping the desires and actions of the individual worker appear to be lessening. The only adequate method of inducing harmony in the situation is the recognition of the dignity and the value, not of any one group alone, but of all functional groups.

Graphic Labor Control

By Eugene J. Benge, *Philadelphia, Pa.*

The interpretation of facts through graphic presentation has a value in guiding personnel practice no less than in controlling production. Mr. Benge, Manager of Industrial Relations of the Atlantic Refining Company, describes in the following article five wall charts which have been found useful for graphic labor control.

THE growing interest in economic study has brought curves and charts into the limelight. Inasmuch as labor constitutes one of the important factors in economic conditions, it is but natural that personnel research should be developing along with the interest in economic topics generally.

The idea of graphic labor control, therefore, merely represents an adaptation of an already accepted procedure to the needs of the Personnel Department. In the company with which the writer is associated, statistics of labor conditions have been compiled consistently for the last four or five years. Recently many of these data were prepared graphically. This method of presentation has proved to be of value in comprehending labor conditions, in predicting trends, in pointing out wrong conditions and in selling the departmental activities to management.

Figure 1, Labor Indices, reveals eight different facts on one chart. The top line shows the fluctuations in the total number of men on the plant pay roll. This number includes laborers, boiler makers, bricklayers, carpenters, electricians, machinists, painters, pipe fitters, riggers, engineers, firemen, stillmen, pumpers and scores of other occupations. The second line shows the average number of men working each month. It is obvious that the area between these two lines indicates absenteeism for one cause or another.

The decided trough in 1921 clearly shows the extent to which this company was hit by the depression. The narrowness of the absenteeism path during 1921 is but another evidence of industrial conditions.

At the time this is being written (March, 1924) there is some unemployment and the decrease in absenteeism reflects this condition of the labor market.

In this company about 25 per cent of the plant employees work on shift, in connection with the distillation of oil. Accordingly it was felt desirable to study the shift pay roll as a separate index, as shown by the third curve, figure 1.

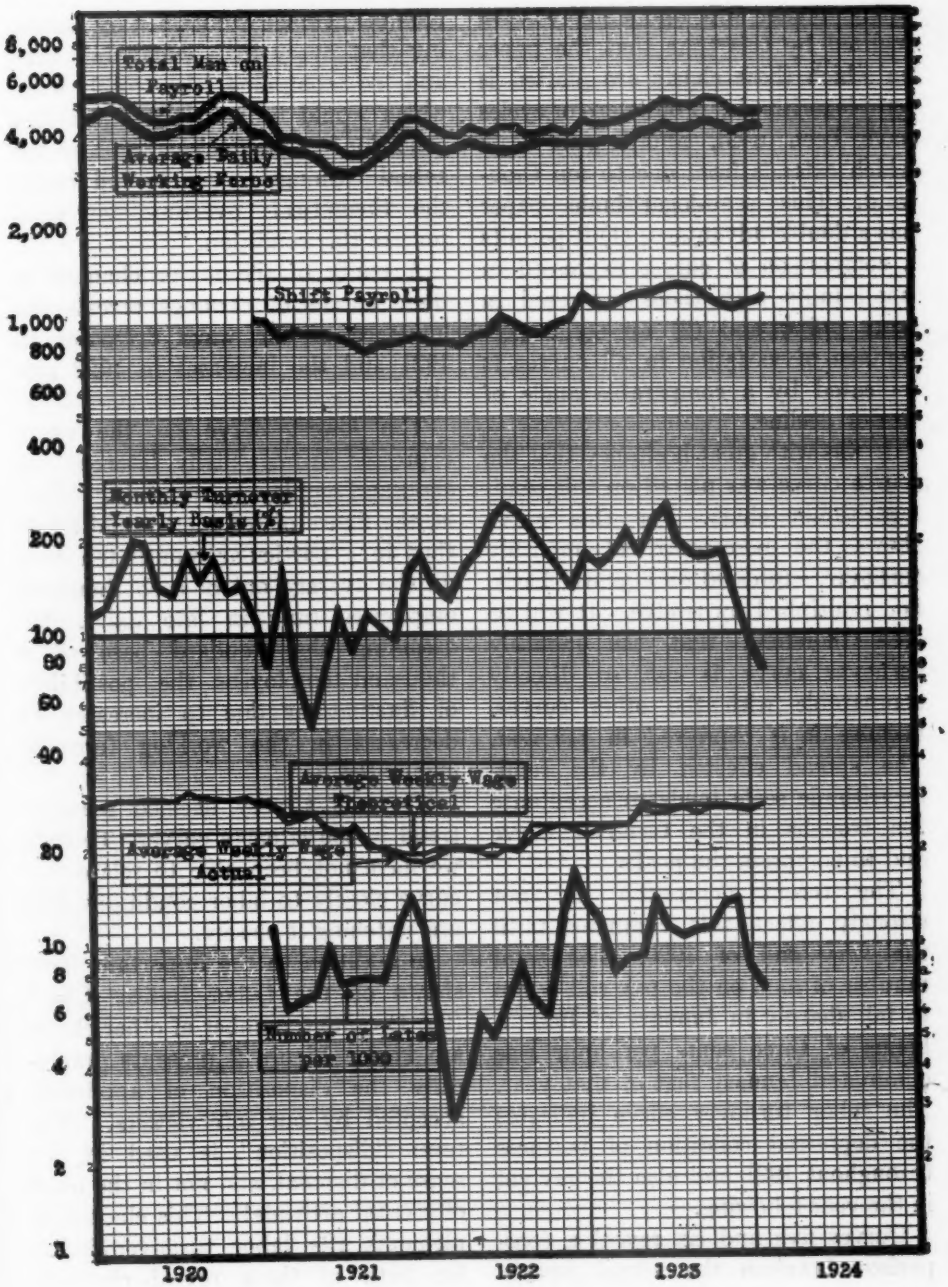

FIG. 1. LABOR INDICES, POINT BREEZE PLANT

The reader will undoubtedly have realized by this time that the paper on which these charts are plotted is semi-logarithmic. Four steps or cycles have been used, affording a scale which extends from one to ten thousand. This semi-logarithmic paper has a double advantage; (1) it permits a comparison of curves expressed in small units with those expressed in large units, and (2) an equal percentage of variation in all curves is indicated by a comparable angle of rise or decline.

It was with great hesitancy that the fourth curve was placed on this semi-logarithmic chart. For this curve shows the percentage of monthly turnover, expressed on a yearly basis; i.e., multiplied by twelve. It will be seen therefore, that the monthly turnover curve is not so directly comparable with the other curves, because it is expressed in *per cent.* The spread effected by the semi-logarithmic scale tends to accentuate the troughs in the turnover curve and to compress the peaks.

The recent depression did not strongly affect this company until the very end of 1920. The total number of men on the pay roll began to fall sharply in January of 1921; a bonus of three cents per hour was eliminated January first of that year. The labor turnover curve indicates the depressed condition of business throughout 1921 and also the revival in the year following.

Curves five and six reveal a comparison between the actual weekly wage and the theoretical weekly wage, month by month. The actual weekly wage is of course computed from the pay roll expended. The theoretical wage is obtained by assuming that every man works full time and so compiling the total wage which would be paid out under this condition. Absenteeism causes the actual earnings' curve to fall below the theoretical; overtime tends to reverse this condition.

A study of the major changes in these curves of earnings reveals the influence of the wage decreases in 1921 and the increases in 1922 and 1923.

The lowest curve on the chart expresses average daily lateness per thousand employees, monthly. That is, the figure of ten men would mean that in a particular month ten men on the average out of each thousand employees rang in late daily. By assuming the standard base of a thousand employees the possibility of fluctuations due to increases or decreases in the working force is eliminated.

There is a very decided seasonal trend in the lateness curve. To date we have not been able to relate this curve closely to labor conditions, but are watching it closely.

In addition to the important facts shown on the Labor Indices Chart (fig. 1) quite a number of other charts are kept. Figure 2 presents graphically the disposition of applicants accepted by our interviewers. (The term "disposition" is used in the sense of disposal, and not in the sense of mental attitude!) This chart supplements the labor turnover index, for both of them reveal changing conditions in the labor market.

In our employment routine, the applicant is interviewed and an application blank filled out if the inter-

viewer accepts him for employment. At the same time, we look in our files to discover whether the man has ever worked for us before. If he has had no previous service, or if his previous record is clear he is sent to the physician for physical examination. If he passes this he is given instructions when and where to report for work, at which time he is conducted to his foreman.

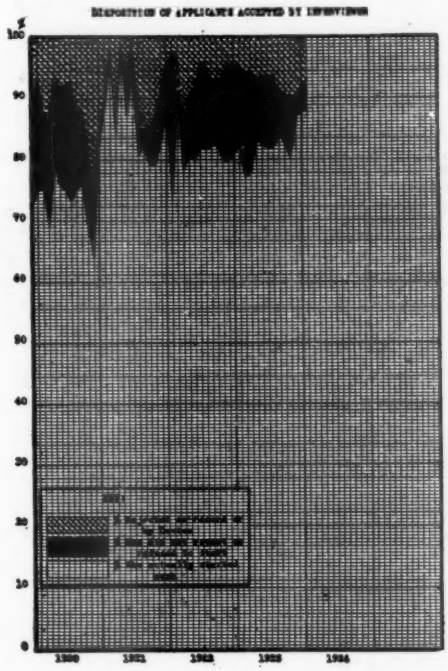

FIG. 2. DISPOSITION OF APPLICANTS ACCEPTED BY INTERVIEWER

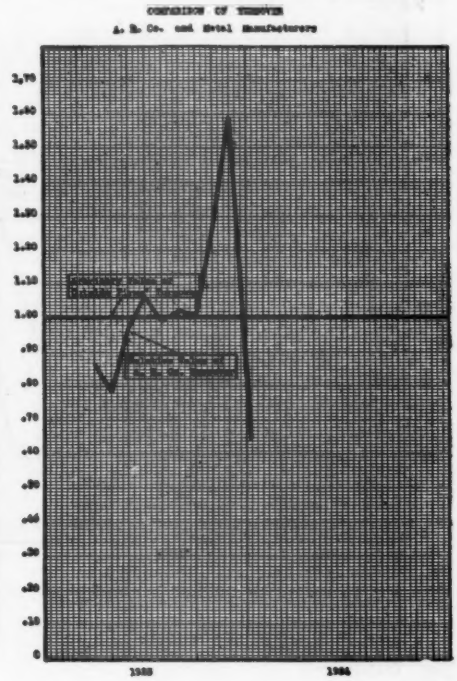

FIG. 3. COMPARISON OF TURNOVER, A. R. CO. AND METAL MANUFACTURERS

The top area of figure 2 shows the per cent of applicants monthly who have been rejected by the Company doctor or on account of previous bad record with the Company. The second area on figure 2 we feel to be the most significant, for it shows the per cent who voluntarily failed to start work after they had been accepted. Notice how this area dwindles to a mere ribbon over the depression period of 1921, contrasting strongly with the inflation period of the early part of 1920. In passing it should be stated that the depression which struck so many concerns around the middle of 1920 did not make itself strongly felt in this organization prior to the last few months of that year. We feel that the percentage of applicants who fail to start is a particularly sensitive index for it can readily be obtained daily and so serve as a prognostication of changing labor conditions.

Based on forty-eight months, the correlation between the per cent who failed to start work and our monthly

turnover index was +0.464. We suspected that the former preceded the latter, and accordingly adjusted for a one month's lag by correlating January "failed to start" with February turnover, etc., and secured a slightly higher correlation of +0.513—not necessarily significant, due to the few cases.

this purpose we use labor turnover of some 50 concerns in this city employing approximately 43,000 men. This comparison is shown in figure 3. It is probable that the somewhat seasonal nature of the oil refining business together with the fact that almost all our plant men are exposed to severe weather conditions will cause

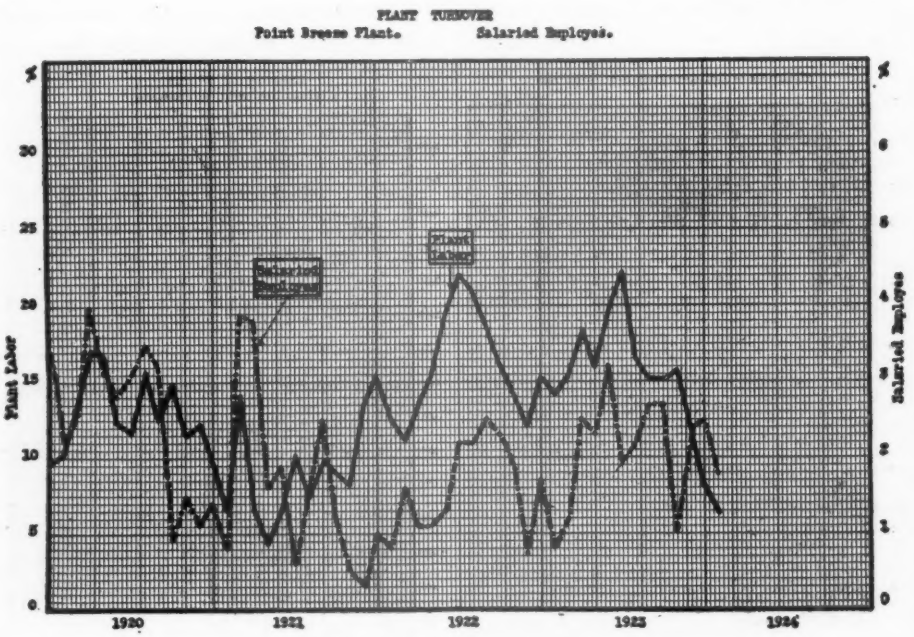

FIG. 4. PLANT TURNOVER

There is always a danger of becoming confused by making *intra*comparisons of business curves. We cannot be elated merely because the labor turnover curve, for example, falls off. It is quite possible that it should fall more rapidly than it does. What is here needed is a comparison of the rate of rise or fall of our own labor index with some kind of master labor turnover index, indicative of labor conditions in this city. For

the ratio to be against this company during the winter months. Most of the organizations represented in the 50 concerns are metal manufacturing plants well housed and not subject to seasonal conditions. After several years of experience with this curve we shall be able to determine whether there is a seasonal variation apparent.

The statement is often made that office labor turnover does not conform to that of the factory or plant. Fig-

ure 4 certainly belies this statement for our particular company. It is quite evident that the various seasonal fluctuations of labor turnover for the plant agree rather closely with the fluctuations in the curve of office turnover. There seems to be a slight indication of a one month's lag below the peak of the plant curve in the corresponding peak of the office curve. The same holds for the troughs. The reader will note that the office curve has been superimposed upon the plant curve by the use of a separate vertical scale for the office curve, shown at the right of the chart. Without this explanation he might judge that the office turnover is as high month in and month out as the plant turnover, which statement is, of course, far from the truth.

Figure 5 represents an interesting comparison of our plant wage with the cost of living in Philadelphia. It will be noted that the plant wage has consistently been higher than the cost of living in this city, based on 1913 standards. The figures for the cost of living are obtained from the United States Bureau of Labor Statistics.

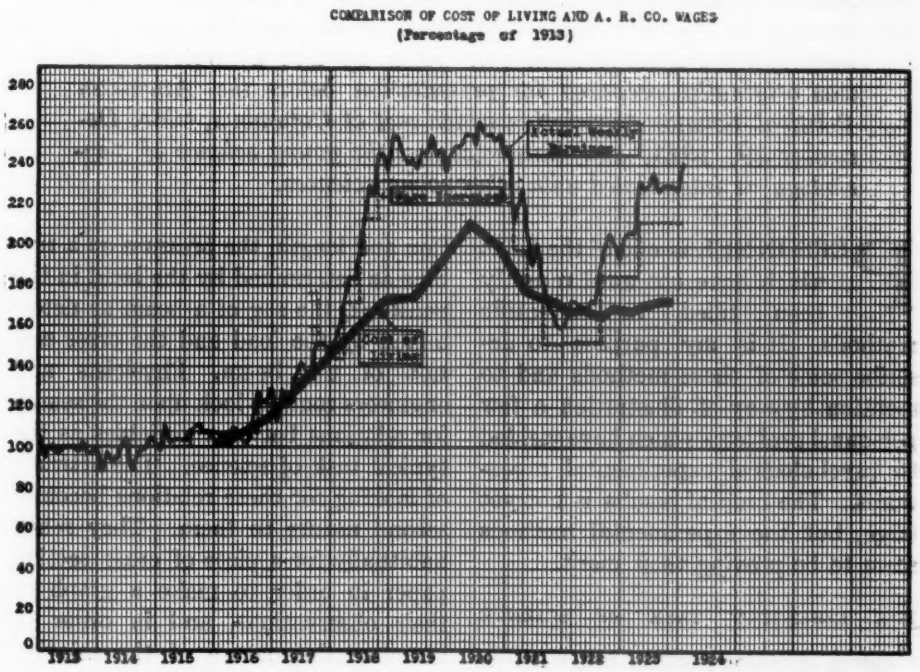

FIG. 5. COMPARISON OF COST OF LIVING AND A. R. CO. WAGES
(Percentage of 1913)

What Is Personnel Research?

By L. L. Thurstone, *Bureau of Public Personnel Administration, Washington*

A clear definition of what personnel aims at and also a statement of the essential method employed in all scientific personnel investigations is set forth in this paper by Dr. Thurstone. It was originally prepared for presentation before the American Political Science Association which met at Columbus, Ohio, December 29, 1923, and illustrates how the young science of psychology is interrelated with other social sciences.

PERSONNEL is one of the fields which have not until recently been tilled by scientific methods. It is my purpose to describe some of these methods and to mention by way of illustration a few personnel problems which have yielded to psychological experimental procedures. The crop of results is not yet large, but the experimental methods seem to be proving their merit.

THE ESSENTIAL TASK OF SCIENCE

Every scientific problem is the search for the functional relation between two or more variables. This can be seen very clearly in the exact sciences, but it becomes more obscure as we enter the biological sciences, and it is frequently lost sight of in the social sciences. In physics, we have, as typical problems, the search for relation between the length of time that a body has been falling and its speed, the pressure of a gas and its temperature or volume, the curvature of a lens and its focal distance,the resistance of a wire as determined by its cross section and length, the pressure on a turbine as determined by the head in the penstock, the sag of a beam as determined by the load and the cross section of the beam. Physicists and engineers come to look upon the search for relations between variables as the typical task of science. The attitude of looking for these relations becomes second nature to them. They reach habitually for a piece of cross section paper in order to make a graph of their observations, and in order to visualize the nature of the relation that they are seeking.

In the biological sciences we find the same logic exemplified by the brilliant work of Karl Pearson in England and his many disciples, who are using the biometric methods. As examples we have the attempt to state longevity of seed as a function of the average temperature at which the seed have been kept, and the attempt to measure biological traits as a function of the same traits in the parents.

In economics, which is perhaps the most developed of the social sciences we have, similarly, a search for rela-

tions between variables. Rent, of buildings, for example, is a variable which is determined by certain other variables such as density of the population, elevation of the ground, prestige of the district, distance from interest and business centers, transportation facilities, and so on. Here again, we find this essential characteristic of every scientific problem in the search for relations between variables. Some of the variables in the biological and social sciences can be quantitatively measured but many of them cannot yet be profitably stated in quantitative form. Thinking about any scientific problem is invariably clearer if the problem is described as a hunt for the relation between variables, and if the variables are definitely stated even though it may not be possible to give all of them a numerical form.

In psychology we also have the search for relations. There we are curious about the relations between conduct and environment or between the life impulses of people and the way in which these impulses or desires express themselves in conduct. For example, the quickness with which one can respond to a signal is a variable measurable in thousandths of a second and it is determined by other variables such as the size, intensity, and arrangement of the signal, the sense department by which it is perceived such as vision, hearing, and touch, and the complexity of the response that is called for. As an example of the social problems in psychology we have the relation between repeated success or failure in youth and the personality. Whenever we are dealing with a scientific problem our first task in understanding what it is all about is to state clearly the several variables that are to be related.

THE VARIABLES IN PERSONNEL

Let us now turn to personnel and apply the same criterion to its scientific problems so that we may see what is meant by personnel research. I should like to propose that personnel is the study of the relation between *working* and *living*. Every personnel problem is an inquiry about the possible relation between some aspect of productive work and some aspect of satisfactory living. The professional practice of personnel is simply the practical application of the known relations between working and living. For example, a pressman at one of the publishing houses in Philadelphia was observed to become careless and so inefficient that he was slated for discharge. He previously had a record of loyal and efficient service and the employment manager became curious to know why this man should have changed his attitude toward his work in the course of a month or two. A talk with the man revealed that he had distressing circumstances in his home. His wife was seriously ill and was not expected to live. In addition he was fighting financial difficulties. He simply did not have energy enough to spread it to his work. Instead of discharging the man he was given assistance and he is now again one of the loyal and efficient employees. This was a personnel problem because it concerned the relation between a man's personal life and his productive work.

EXPERIMENTAL METHODS IN PERSONNEL RESEARCH

This example illustrates what is meant by personnel, but it is not scientific research. Let us see how the experimental methods of science may be applied in the field of personnel. The first step in productive work is employment. When there are more applicants than there are vacancies some method of selection becomes necessary. Suppose that the vacancies are twenty positions as general office clerk. There are several factors that may conceivably serve as criteria of fitness for clerical work. Among these factors or variables are the impression on the employment interviewer, amount of general schooling, physical health, record with past employers, school marks, performance in employment tests. To apply the experimental methods of science is simply to record in some more or less measurable way these various factors at the time of employment and to compare these records with the subsequent performance of of those who are appointed. Such comparisons can be made by the so-called correlation methods in statistics by which the personal bias of individuals is ruled out, as it should be in a scientific experiment. Then we find that certain factors are more valuable than other factors in predicting what an applicant can do on the job. When these factors have been evaluated statistically it is possible to give the employment manager a definite program by which he may predict the relative capacities of applicants and make his selection on a scientific basis. The first step is to compare any factor, such as general schooling, with the known proficiency on the job for a fairly large group of people whose working capacities are known. If the relation between proficiency and amount of general schooling is close, then that factor is a good one to use at the time of employment. If the relation between these two variables is not close, then schooling should not be given much consideration in employment. The experiment is first made on people whose abilities are known and then the favorable results can be used to advantage when we are called upon to judge strangers who apply for positions. That is the fundamental logic in applying experimental methods to employment problems. Of course it is necessary to make a separate experiment and evaluation of employment facts for every kind of position. As a result of such experiments on employment tests for general office clerks it is now possible to give employment managers a series of tests consisting of sample clerical jobs that can be administered in an hour and by which the applicants' proficiency in clerical work is predicted with a fair amount of certainty.

APPLICATIONS OF THESE METHODS

Let us look at another example of the application of scientific method to personnel problems. The Scott Company was called as consultant to study the turnover problem in a large industrial plant. Here the dependent variable was the turnover record. The task was to ascertain the independent variables that contributed to or caused the turnover. Among

many other experiments they decided to try an intelligence test for all the employees and to see if there was a relation between these two variables. A year after the tests were given they plotted a curve for each department showing the relation between the score in the intelligence test and the average length of service with the company. These curves showed a striking and interesting relation in that some departments were losing their brighest people, whereas other departments were losing their unintelligent employees. This scientific experiment established the mere fact of relation between intelligence and length of service, but the relation varied in the different departments. What could be the reason for that? The departments were then judged or rated according to the degree of monotony and diversity, simplicity and complexity, of their work. That rating for each department was compared with the shape of its curve. It was found that bright people who are doing monotonous work quit, and it was also that stupid people who attempt to do diversified and complex work also quit. Here we have a deduction based on a scientific experiment which is of practical value. The employment manager saw the point and he now tries to assign the brightest applicants to positions where their minds have something to do, while the less intelligent applicants are assigned to simple factory work. Even in the employment of factory workers it pays to note the mentality of the applicants and to assign them to work which is as nearly as possible commensurate with their general mentality. This sounds like the simplest kind of common sense. After all, science is only organized common sense with this difference, that a scientific experiment often brings out a bit of common sense that we did not think of before.

My main mission in the new Bureau of Public Personnel Administration is to assist civil service commissions to adapt the experimental procedures to their problems, and more especially to assist them in writing effective employment tests for the public service.

In another experiment with turnover it was found that the employees in a certain department would frequently become disgusted with their work and walk out. There was apparently something in the nature of the work which caused bad temper and irritation. The experimenter spent some time in the department getting acquainted with the employees and he ventured the hypothesis that the work required a peculiar and awkward posture which caused excessive physical fatigue and consequent emotional imbalance. He suggested that the employees in that department be given short rest periods during which they should lie down with their feet slightly higher than their heads. This sounded fantastic but the experiment was tried. I was skeptical about so fantastic a solution but the proof of the pudding is the eating thereof. The turnover trouble disappeared. In this experiment the variables were the postural rest periods, the turnover records, and the production records.

The same experimental attitude is being applied to a wide variety of problem in which the happiness, comfort, ambitions, and incentives of people are related to some aspect of

their productive work. Personnel work covers such varied problems as employment, training, promotion, analyses of jobs in relation to aptitudes, classification of positions, pensions, and so on.

THE AIM OF PERSONAL RESEARCH: TO HARMONIZE WORKING AND LIVING

The most serious personnel problem is in the circumstance that so many people separate the two realms of working and living as though they were necessarily antagnoistic. Work is frequently looked upon as a necessary evil,—a means to an end. The goal of personnel research is to harmonize these two realms as far as possible by providing situations of productive work which are not hated as a necessary evil, which include opportunities for self-expression, the enjoyment of power, mastery, freedom, control, social approval, and self-advancement. Work should be a part of that for which a man lives. To the extent that the conditions of work give the opportunities for these life satisfactions it becomes correspondingly less urgent for each individual to turn his attention away from work to gain these satisfactions. It is the business of personnel to ascertain the conditions under which the opportunities for self-expression, self-assertion, self-respect, self-advancement, and social approval, may be provided in ways that are consistent with productive work. Personnel research can be defined as the study of the conditions under which productive work may be made a truly integral part of living.

News Notes

BUREAU OF PERSONNEL RESEARCH ESTABLISHED AT UNIVERSITY OF NORTH CAROLINA

The University of North Carolina is forging ahead toward leadership in personnel research on problems affecting the educational and vocational careers of university students. Like Columbia, Dartmouth, and Northwestern, it is not content to leave these problems to be solved wholly by faculty members and administrative officers whose primary responsibilities are focused in other directions. President Chase and Prof. Francis F. Bradshaw, Dean of Students, have introduced a comprehensive program of student examining, counselling, and placement, and have taken steps toward coördinating the work of the University with the industrial, commercial, and professional demands of the State. Now comes the announcement of the establishment in the Department of Psychology, of which Professor Floyd H. Allport is head, of a Bureau of Personnel Research. This Bureau is entering upon the investigation of methods for promoting the educational adjustment of its students, and for psychological guidance in the choice of vocations and in adaptation to the various phases of student life. The major problems which are to be undertaken by this bureau are the assembling of a complete bibliography upon various phases of vocational and personnel work, the collecting and administering of available tests for the measurement of intelligence and other traits to freshmen, and the working out of an administrative technique whereby the results of such tests may be made effective in the organization of college work, the development through research of a suitable group scale for the measurement of fundamental personality traits, the promotion of mental hygiene among students by general methods and more particularly by the individual treatment of students whose work is handicapped by emotional conflicts and other nervous conditions. The work at North Carolina is still in its infancy, but it is hoped that progress will be made toward supplying at this university a need which is now realized by many educational institutions. The new bureau will welcome the advice and coöperation of similar personnel organizations throughout the country. Address: The Bureau of Personnel Research, Department of Psychology, University of North Carolina, Chapel Hill, N. C.

MANUFACTURERS COÖPERATIVE PLAN

In a recent issue of *Science* there was announced the development of a plan for the coöperation of Yale University and the Manufacturers Association of Connecticut in industrial research and educational work.

The plan was developed under the leadership of John A. Goss, of Waterbury; E. Kent Hubbard, of Hartford; L. S. Tyler, of New Haven; Howell Cheney, of South Manchester, and Samuel Ferguson, of Hartford, working with a committee representing Yale University, consisting of Dean Charles H. Warren, Prof. L. P. Breckenridge (later succeeded by Prof. S. W. Dudley) and Prof. F. E. Spaulding.

"The plan for coöperation aims to enable the industries of the state to secure greater access to the facilities that the university possesses for the carrying on of scientific and technical research, and for manufacturers to secure more easily the services of young men technically trained along the lines of special importance to their particular industries. On the other hand, it aims to afford the university an oppor-

tunity to render a more effective service to the community; to bring its students and staff into closer contact with the practical applications of science to industry through the investigation of problems arising in the industries; and to afford its students better opportunities for securing practical experience by actual work under supervision in manufacturing plants during vacation time.

"For many years past the university, chiefly through its scientific and engineering departments, has coöperated with individual manufacturers in carrying out technical and scientific investigations in a number of different fields. These investigations have been carried out by members of the staff, or under their direction, and have frequently furnished results of value to the particular industry concerned and to science and technology in general.

"It has not, however, been generally known, particularly among the smaller manufacturers more remote from the larger industrial centers, that such work was being done or that it could be done. Under the plan developed by the university and the association it is now proposed to direct the attention of all industrial concerns throughout the state to the fact that such facilities are available and to emphasize as strongly as possible the benefits to be derived from research.

"The main features of the plan include provisions for research; use of the university library facilities; employment of scientifically and technically trained Yale graduates; the training of specially qualified young men sent by manufacturers to the graduate school of the university; the loan of equipment to the university for use in training students; and the inspection of factories, summer employment of students and coöperative education, as a part of technical and semi-technical courses at the university.

"The provision for research will be worked out under the plan as follows: a member of the Manufacturers Association desiring the investigation of a problem may send his inquiry to the association headquarters at Hartford. At the discretion of the research committee of the association the problem will be submitted to a committee acting for the university, and arrangements will be made to carry out the investigation either at the university or at the plant of the party proposing it. The research work, under the direction of well-known experts in a variety of fields, will include economics and finance, administration and management, transportation, applied psychology, public health, bacteriology, chemistry and chemical engineering, physics, mining and metallurgy, and civil, electrical and mechanical engineering.

"Under the plan industrial concerns are to have access to the library facilities of the university for obtaining statistics and information concerning technical processes that usually can not be obtained in public libraries.

"The attention of manufacturers is to be directed to the possibility of securing scientifically and technically trained young men through the university Bureau of Appointments, which assists in placing Yale graduates in positions for which their training fits them.

"In order that the university may train students in the designing and use of special machinery and apparatus, arrangements will be made through the committee for the loan of equipment to the university. Tests will be made of such equipment, and the results will be available to the company furnishing it.

"The coöperation of manufacturers with the committee will be sought in developing plans for summer employment and cooperative education. The advantages which will accrue to industry through such coöperation are believed to be great.

"Students will be given the opportunity to visit plants throughout the state as a part of technical and semi-technical courses."

BRITISH ASSOCIATION FOR ADVANCEMENT OF SCIENCE

In view of the fact that the British Association for the Advancement of Science has recently added to its various

sections a Section of Psychology the Organizing Committee feels that the meeting of the Association to be held at Toronto August 6 to 13, 1924, will afford a unique opportunity for intercourse between psycologists of Canada, the United States, and Great Britain. Many of the psychologists who will speak at this meeting are those who have been directly responsible for the admirable work done in Great Britain on the application of psychology to business and industry.

Professor McDougall, F.R.S., of Harvard University, has been appointed President of the Section and will deliver the presidential address. Papers will be read by Dr. Morton Prince, Dr. Brett, Dr. Bott, Dr. Bridges, Dr. Sandford, Dr. Tait, Dr. Myers, Dr. Burt, Dr. Drever, Mr. Flügel, Dr. Miles, Professor Pear, and other leading American and British psychologists.

Joint meetings have been arranged with the Section on Anthropology to discuss Racial Mental Differences, with the Section on Physiology to discuss Applications of Physiology and Psychology to Industrial Efficiency, and with the Section on Education to discuss Tests for Scholarship and Promotion.

INTERNATIONAL CONGRESS OF MENTAL HYGIENE

The *Mental Hygiene Bulletin* reports that the First International Congress of Mental Hygiene, to be held in this country in 1925, if funds for the purpose can be secured in the near future, will not be simply a gathering together of physicians, state officials, and social workers in close contact with the insane and feebleminded; but, because of its scope and character it is safe to predict that all groups of socially minded people, especially those engaged in education, public-health activities, deliquency, and child welfare, will be represented in the large attendance expected.

Dr. William H. Welch, Chairman of the Organizing Committee says of the proposed meeting: "The project for an International Congress of Mental Hygiene should make an especially strong appeal from the fact that this will be the first such Congress relating to this subject. The organized movement for the preservation of mental health and the prevention of mental disorders is so recent and has acquired so great significance in its possibilities of good, that the time has come to give to this movement the inspiration, stimulus, and direction along the wisest lines that may confidently be expected from such an international conference as the one proposed. The field to be covered by such a Congress, moreover, is one of the greatest importance for human welfare in the present condition of international affairs."

The Organizing Committee includes at present representatives of the following countries: Australia, Belgium, Brazil, Canada, China, Czecho-Slovakia, Denmark, France, Great Britain, Holland, Hungary, Italy, Japan, Luxemburg, Norway, South Africa, Spain, Sweden, Switzerland, and the United States.

COAL MINE ACCIDENTS

Just as there is a much needed revision of methods for reporting industrial accidents of all kinds in the several States there is also, according to Dean Holbrook of the Pennsylvania State College School of Mines, a great need for drastic revision of the mining laws and regulations of most of our coal mining States. Other authorities writing in the *American Labor Legislation Review* show that safety laws lag far behind knowledge of what can and ought to be done to prevent needless loss of life.

In this connection it is interesting to note that negotiations have been started for a coöperative study between the United States, and Great Britain, and other European countries. This project was announced by Dr. R. V. Wheeler, who is Director of the Great Britain Mines Department Experimental Station at Eskmeals, England. Dr. Wheeler recently headed a party of British mining experts in a visit to Pittsburgh to study safety in mines in coöperation with the Pittsburgh Station of the United States Bureau of Mines.

In a series of lectures at Carnegie Institute of Technology he said, in part:

"Although explosions do not account for more than a small fraction of the fatal accidents that occur in coal mining practice, the majority of deaths being due to falls of roofs and sides of the mine roadways, they impress the mind with a greater sense of disaster. It is natural to regard an explosion, that sends to their death at one stroke two or three hundred men, with greater alarm than a succession of small accidents the very frequency of which tends to cause them to be regarded as a necessary hazard of the coal miner's calling. It is natural, therefore, that much patient study has been devoted to the character of firedamp and coal-dust explosions, with a view to eliminating them from the miner's life; *but it should be borne in mind that there is no less a need for patient study of the causes and prevention of these minor accidents.*

"There is every reason to believe that, as the result of conferences now in progress, a definite scheme of active coöperation between the Bureau of Mines in the United States of America and the Safety in Mines Research Board in Great Britan will be inaugurated."

Book Reviews

THE BACKGROUND OF ECONOMICS

By Hunter and Watkins. New York: McGraw-Hill Company, 1923. Pp. 514

REVIEWED BY T. H. BAILEY WHIPPLE

The authors state in their preface that "The book has been written in response to a demand for a text that would bridge the gap between high school courses in social science and college courses in the principles of economics." That is an elusive target to shoot at, because of the wide variation in the amount and quality of training in economics offered by the various high schools. Many of the high schools limit their work in the field of social sciences to history and civics; at the other extreme are those with an ambitious curriculum which includes not only commercial geography and economics, but even money and banking, accounting, marketing and other specialized phases of business training.

"The Background of Economics" contains little that is new to one who has had the ordinary high school courses in geography, commercial geography, civics and economics. It is, itself, a rather well done sketch of human, commercial and industrial geography, the elementary concepts of economics, and of civics in its more obvious relations to business. As such, it may be helpful in giving a review and perspective to one who has permitted some years to pass since he studied those subjects, or to one who in the first place ran through them in the somewhat callow and uninterested manner common to many high school students.

The book will be most valuable, however, to those who thus far have neither begun the study of economics nor delved into the fascinating subject of commercial and industrial geography. The authors point out the fact that "Many students begin their study of the principles of economics just as they do the study of chemistry or mathematics; namely, as an abstract science with no particular relation to the knowledge which they have already acquired and the experiences through which they have passed." Unfortunately, this is all too true, especially if the student begins with a text that is dull (as most of them are) and has an instructor who is unable to breathe life into the dry bones of economic theories and formulae.

This book does tell something about the world we live in—the people in it, the forces of nature, the things we manufacture and buy and sell and consume, our complicated system of production, finance and marketing, the manner in which the wealth we produce is divided among the factors responsible for its production, the government we have established to regulate our intercourse with one another. It provides a brief and interesting survey of the things men do in the effort to make a living and obtain the luxuries they have learned to desire. Thus it serves as a valuable preface to a more serious and exhaustive study of economics.

The authors appropriately devote some fifty pages in the beginning to a study of man, himself, and the society he has organized. Prominent economists and successful business men are turning more and more to psychology in the effort to discover the forces which move men to action. Sales-

men, advertising men, executives, to succeed, must know how to influence men. The fundamentals are touched upon in these fifty pages.

Climate, topography and soil, as economic factors, are next discussed, followed by a survey of the products of the sea, mine, forest and field; the problems of agriculture are outlined; and the more important manufacturing industries are briefly sketched.

Then comes a study of the way in which new wealth is divided among the four factors of production—land, labor, capital and management. The division of income between rent, wages, interest and management involves some of the most perplexing problems of modern society, and these are presented in simple and interesting style.

The mechanism of exchange is described briefly. Money, credit, banking, marketing channels, means of transportation, fundamentals of foreign trade are covered and, finally, the relations of government to business.

Obviously, there can be no exhaustive treatment of any subject when so many are brought within the covers of one volume. The authors were compelled to choose a few facts and principles from a great many; and one cannot quarrel with their choice, considering the purpose they had in mind. Debatable points are passed by and there is an apparent attempt to present the orthodox view of principles in so far as possible. This has its advantages with a beginner who is thus saved some confusion at the outset, but it may lead him into the false position of accepting statements without thinking about them.

Let the reader remember that the book is intended only as a "background" for the study of economics; as such it will amply repay the time and thought expended upon it. It would be most unfortunate if, having read it, he should conclude that he has studied enough in the field of economics. At the most, it is only an appetizer.

THE 1924 YEARBOOK OF THE DEPARTMENT OF SUPERINTENDENCE

National Educational Association, Washington, 1924

REVIEWED BY JOHN K. NORTON

Personnel in education and its relation to curricula is one of the outstanding features of the 1924 Yearbook of the Department of Superintendence of the National Education Association. Chapter I shows how a synthetic program of education must consider the interrelationships of the child, the curriculum, the teacher, and the community. The Child's Capacity for Education is the title of chapter II, which is a survey of actual conditions in a large city school system. In this survey consideration is given to the chronological, physical, mental, social, and moral ages of children. Differentiation of curricula to meet community and individual needs is also discussed by school administrators and specialists.

The 1924 Yearbook may be characterized as a compilation of representative current opinion and practice throughout the United States, regarding the elementary school curriculum. Other factors considered, in addition to personnel problems, are: Present methods of devising, revising, and supervising the curriculum; general aims and objectives of education; some recent methods of determining curricula; who shall make the course of study and why; facts on time allotment; motivation of the study of occupations; problems of the junior high school; and future trends in curriculum making.

SCIENTIFIC MANAGEMENT

By Horace Bookwalter Drury. New York: Longmans, Green and Company, 1922

REVIEWED BY BOYD FISHER

The first written evaluation of scientific management which was at once scholarly and disinterested remains the best. Horace B. Drury's book when it appeared first, in 1915, was an unique document. Up to that time most of the published comment on the Taylor System and its derivatives had been uncritical and deeply partisan. Advocacy of the system was in the hands chiefly of those in position to profit from it,—the management engineers themselves, or industrial leaders such as Henry R. Towne, James M. Dodge, and Brig. Gen. Crozier of the Ordinance Department. Nearly everything written from their angle was oversanguine of the benefits of the movements,—how much so, it is amusing now to recall. Their zeal was appropriate, one must admit, when one considers the attacks they had to meet and the fact that enthusiasm is a virtue in pioneers.

Opposition to the movement was often strong in industry, but the vocal part of it originated with labor leaders who themselves had not worked under the system, or even in industries to which it had been applied. On theory and hearsay, they feared it.

Almost all of the disinterested criticism came from social workers not sufficiently acquainted with the technique of industry to understand it. They drew their inspiration from the overwrought statements of the trade union leaders, or from unfortunate and tactless declarations of Dr. Taylor himself. Much was said about the dangers of "speeding up," a term that was applied indiscriminately to Taylor shops and sweatshop tailoring plants.

Yet a correct view of scientific management, if it were offered at all, could come only from an outsider. A fundamental cleavage still existed between Taylor engineers and trade-unionists. No one had yet attempted to reconcile them. Dr. Taylor and his followers asserted that their system had rendered unions unnecessary; these organizations had succeeded in some cases in having scientific management declared illegal. Theoretical differences had crystallized into prejudices and often bitter antagonism.

A critical investigator who sugested that the two agencies might properly work together for the advancement of management was set down by both parties as a dagerous theorist. In response to this reviewer's timorous query whether the introduction of scientific management might not be the outcome of a collective agreement, with unions helping to supervise, as a check against possible misapplications, Dr. Taylor in 1914 vehemently replied that "you could as sensibly bargain collectively about the rising and setting of the sun as about what constitutes a proper task."

I remember with what surprise and gratification I received a visit that year, in the office of the Efficiency Society, from a graduate student at Columbia, who was able to offer sound reasons for a closer understanding between the scientific management engineer and the trade-unionist. Horace Drury had thoroughly investigated and existing installations of the Taylor and similar systems, talked with all the leaders of the movement and with articulate trade-unionists, and had kept his own head. He had brought an unique mental equipment to the inquiry—a capacity for thinking at once vigorous and dispassionate—and the result of his thinking was the firm belief that the engineer and the labor leader had a joint stake in scientific management, and ought to work together. This view was novel among critical students at the time. Even Prof. Hoxie, investigating the subject for the United States Industrial Commission, did not see so clearly, or so definitely.

The written thesis which Drury offered in 1915 outlined his conclusions so lucidly and so ably that his work stands today, eight years after, as still the most trustworthy short text on the movement. The work has been brought up to date in this third edition, it is true, but no more striking tribute to the correctness of his first propositions could be offered than the fact that all of the revisions take the form of additions, which recount the steady growth of understanding between the engineers and the organized workers—the realization of Drury's earlier suggestions.

Not much of the work deals with this particular problem of relations; it is too good a piece of criticism for such overemphasis. Most of the inquiry deals with the history, the meaning and the existing state of the movement, and the lives of the leaders. But the original force of the thesis lay in the conclusions:

(1) A clear-sighted approval of the essential features of the Taylor system,
(2) An equally clear-sighted rejection of its claims to infallibility, and
(3) A courageous suggestion that the weaknesses and dangers of the system could be avoided more certainly by bringing organized workers into partnership with it.

The coöperation foreseen by Drury was greatly furthered by the war. Union leaders and scientific management engineers were both snatched from the scenes of their old quarrels and set to work together at Washington. Here, united in a cause outside the range of their personal prejudices, they learned not only to respect each other's good faith, but even to rely upon each other's special equipment. They discovered that they magnified each other's efforts when they had an acknowledged reason for working together outside of industry. The thought naturally took shape that there was wanting only the constitution of a joint purpose and a working agreement to enable them to get the benefit of coöperation within industry. The history of scientific management since the war, which Drury outlines in a new introductory chapter, is a history of the effort to find that working agreement and its increasing success.

Favored as it was by the circumstances of the war, however, this rapprochement may reasonably be said to have been facilitated by the long existence in print of a well-supported call to an understanding, such as Drury's book.

As brought up to date, this work remains the most reliable and rounded study of scientific management, its origins and its outcome. In the first edition, it commanded respect as a work of history and criticism; in the latest form it deserves greater respect for having become a part of that history, and a record of the justification of that criticism.

MANAGER'S MANUAL

Life Insurance Sales Research Bureau, New York, 1923. Pp. 119

Reviewed by Jay Ream

A wise man once remarked, "If people talked only when they had something to say and something which needed to be said, conversation would perish as a lost art." This arraignment of most conversation applies almost equally well to most book writing. A promising title has caused many a book to be picked up expectantly, only to be laid down regretfully when one discovers that the author has merely aired his personal opinions, and what he says is neither analytical in approach nor general in application.

Accordingly, it is peculiarly gratifying when one finds a book which says something and says it briefly and well. The Manager's Manual, published by the Life Insurance Sales Research Bureau, is a splendid book on building a selling organization. Sixty life insurance general agents and branch managers in different sections of the country were carefully interviewed in accordance with a standard outline. They were questioned minutely concerning their methods of doing business. The Bureau investigators were on the lookout for practices which had proved unsuccessful as well as those which were valuable. The personal interview when properly conducted yields information more specific and useful than the written questionnaire.

The material thus secured was classified and studied until there were brought to light principles of general application in recruiting salesmen and building selling agencies. A few of these are:

1. To get the kind of men you want, go after them. It is vain to wait for applicants.

2. Never close with a prospective agent on first interview. Get information on your man from as many different sources as possible.

3. State frankly the difficulties of the work.

4. Be sure to meet the prospective agent's wife; her coöperation is essential.

In addition there are some very valuable suggestions for advertising for salesmen.

The question of the value of training salesmen has passed the argumentative stage. It is no longer experimental. It is an established principle of sales management. The training of managers of salesmen is newer. The familiar objections appear; e.g., managing salesmen is easy for the man with personality, and no system of training can make a success of the man without personality. But the Bureau investigators report, "We were amazed to find how common was the custom among managers not to have a clear idea of what the job was." The need for training is clear. The Manager's Manual is the first real textbook of its kind. Although written specifically for the life insurance field, it may be read with profit by any sales manager.

Books Received

(Notice here does not preclude fuller notice later)

Principles of Advertising. By Daniel Starch. Chicago: A. W. Shaw Company, 1923. Pp. vii+ 998. $5.00.

Factory Management. By Henry Post Dutton. New York: Macmillan and Company, 1924. Pp. 329.

The Hobo. By Nels Anderson. Chicago: University of Chicago Press, 1923. Pp. xv + 302. $2.50.

Apprentice Education in the Construction Industry. Issued by Federal Board for Vocational Education. Washington: Government Printing Office, 1924. Pp. v + 45. $0.10.

Health Promotion in a Continuation School. By Harriet Wedgwood. Washington: Government Printing Office, 1924. Pp. 25. $0.05.

Science in Management for the One Best Way to Do Work. By F. B. and L. M. Gilbreth. Milan: Società Umanitaria, 1923. Pp. 31.

Work of Children on Truck and Small-Fruit Farms in Southern New Jersey. Children's Bureau, United States Department of Labor. Washington: Government Printing Office, 1923. Pp. v + 58. $0.10.

Indianapolis Vocational Information Series. Issued by the Indianapolis Chamber of Commerce and Indiana University, 1923. To date there have been issued four of this series of twenty-page brochures which are aimed to furnish the youth of Indianolis with some guidance in the important step of entering occupational life.

The subjects covered are: (1) Opportunities for Women in the Telephone Service, (2) Department Store Service, (3) Opportunities for Girls in the Profession of Nursing, and (4) Banking as a Profession. These pamphlets may be obtained from the Indiana University Book Store, Bloomington, at ten cents each. The series is not yet complete.

Industrial Relations in the West Coast Lumber Industry. By Cloice R. Howd, Bureau of Labor Statistics, United States Department of Labor, Publication No. 349. Washington: Government Printing Office, 1923. Pp. vi. + 120. $0.15.

The chief causes of unrest and conflict in this industry have been hours of work and living conditions. To study these it was necessary to study also the very texture of the industry itself. The method of presentation, determined by this consideration, is thus especially interesting.

The Training Department of the Lakeside Press. Chicago: R. R. Donnelley and Sons Company, 1923. Pp. 38.

A historical sketch of the growth of the department, together with an unusually well illustrated description of its progress, aims, and purposes. The foreword states that "The purpose of this book is to show to the boys and the young men of Chicago and vicinity the life-career opportunities offered by The Lakeside Press. Although it is directed particularly to those who are about to graduate from the Elementary and the High Schools, there is the hope that it may prove helpful to parents, teachers, or vocational counselors in their efforts to guide young men toward useful and honorable occupations."

Steinmetz and His Discoverer. By John T. Broderick. Schenectady: Robson and Adee, 1924. Pp. 23. $0.50.

A brief summary of the circumstances incidental to the discovery of this great scientist. The author speaks of it thus: "It is a fragment merely, not a biographical sketch, not even a complete analysis."

50–50 Profit-Sharing Plan 1924. Dayton: The National Cash Register Company, 1924. Pp. 10.

Outlines the 50–50 profit-sharing plan to be used in 1924 for National Cash Register employees.

Abstracts

What Can the Employer Do to Encourage Savings and Wise Investment by Industrial Employees? C. J. Hicks. Harvard Business Review, Vol. 2, No. 2, pp. 194–200.

During the depression of 1920 and 1921, many firms discontinued their advance labor policies and dispensed with what they considered non-essential departments. Personnel departments in many organizations were discontinued. In the main, those started since 1922 have been grounded on sound principles of economics and business management. The question of encouraging savings and wise investments on the part of the industrial employees is very definitely a function of these new personnel departments.

Financial incentives do not necessarily end with the pay envelope. In order to supplement this and encourage workers, various methods of profit sharing and stock participation have been devised. These are grounded on the principle that the worker receives fair wages and also is entitled to some share in the profits. This assumption is open to question since obviously the worker cannot participate in the losses. "Profit sharing is a good thing if it works."

The workman who operates a systematic method of saving is a more valuable and stable member of the community than one who does not. His interest in the organization in which he works is increased if his surplus is invested in the company. This makes him a partner in the concern. If industry can sell stock to its employees, their efficiency is increased. Economy and loyalty result. These factors tend to reduce labor turnover.

The characteristics of successful industrial savings plans may be summarized as follows. The device that is adopted should provide for automatic savings with the encouragement of the employer. This is accomplished through payroll deduction. In order to give training in thrift, the savings plan should be extended over a long period. Obviously, it is a duty of the employer to provide adequate safeguards for this money. Employees' funds should be invested with the maximum safety in reliable securities since the function of these savings plants is to encourage thrift over a long period.

The Standard Oil Company (of New Jersey) has worked out a stock participation program.

"Under this plan employees of more than one year of service are encouraged to authorize deductions from their pay of any amount up to 20 per cent of their earnings. To the amounts thus deducted the employing company adds 50 per cent, and the total sum is forwarded to three trustees who have been appointed by the Board of Directors to receive and care for these funds. The money thus received by the trustees is invested currently in common stock of the Standard Oil Company (New Jersey) at a price that is fixed annually by the Board of Directors at not more than 10 per cent below the current market price."

The Steel Corporation makes a direct contribution to employee stockholders by paying an extra dividend of $5.00 a year for five years to the man who remains in the Corporation and does not sell his stock. This brings the investment up to the 10 per cent level for the five year period, assuming that the stock has been purchased at par.

At present, as the author of this article views the situation, the American workman is faced with three perils; first, the results of indifference on his part and lack of interest in the work; second, hostility to his employer; third, Socialism or hostility to private ownership, to capital. He recommends that the stock acquisition plan is the surest safeguard against all three perils.

Economics for Employees. REPORT OF THE COMMITTEE ON ECONOMICS FOR EMPLOYEES, A. J. BEATTY, CHAIRMAN. American Management Association, 1924, pp. 19.

Discusses the subject of economics for employees and the various methods for presenting the study of economics to employees. The value of economics for employees is steadily becoming more apparent, and large industrial concerns are recognizing the fact that industrial unrest and instability can be avoided by acquainting employees with economic principles and facts.

Definitions of economics seem to take no account of the social factors involved. Economic laws cannot work properly unless there is coöperation among all the workers in question. The trouble is that economics has been an academic subject, written by and for college professors and students. Thus sound economics has never been taught to the industrial leader and the rank and file of industry. Both periods of depression and strikes and lockouts could be avoided if there were a better education in regard to economic problems.

The Committee's examination of subject matter was limited to that material published for corporations schools and material in use in such schools. A partial list of subjects suggested for study contains such items as Statements, Marketing, Transportation, Advertising, Railroads, Supply and Demand, Wall Street, Organized Labor, etc. One of the first lessons of every company should be an explanation of its annual financial statement. This will create more understanding and coöperation than any other one thing.

The American Institute of Banking, National Institute of Credit, and The American Bankers' Association have been offering training in economic problems. The latter association through a Committee on Public Education has distributed to thousands of local bankers a series of brief talks which are to be presented before local gatherings. The trouble with this system is that the local bankers know but little of the subject and are often incapable of presenting it, often the subject matter is such as to require systematic, logical and repeated presentation before the same group for results to be accomplished. The lecture method of presentation in plants is the most common. Its advantages—assuming the professor is theoretically sound—are that it is systematical and technically correct. This method can only be used where the services of a good instructor can be obtained. The method in general is ineffective unless combined with intensive study.

Motion pictures are being used by some concerns to present economic facts and conditions, while bulletins and house organs are used by others. However, no one of these mediums is very successful for presenting theory and principles. The group discussion method is the most successful. In this method there are needed small groups, good leaders, discussion kept to the point, study assignments, supervision of leaders, and a well defined objective.

The survey as a whole showed the following results:

The need for economics for employees is being met in a measure by several national organizations of business concerns, a larger number of educational institutions, and a still larger number of individual, business, and industrial corporations.

In regard to subject matter there are very few books which would serve for texts. The most needed subject matter is that which would give the employee information concerning his own firm.

In regard to methods of presentation, the lecture method is too abstract and technical, while bulletins and house organs lack personal contact. The group discussion method gives the greatest promise of success.

Composite Industrial Poisons. A Review of a Series of Articles by Dr. Johann Mueller which appeared in the April to August, 1919, Issues of the Zentralblatt für Gewerbehygiene. WILLIAM H. RAND. Monthly Labor Review, February, 1920, Vol. 10, No. 2, pp. 176–195.

Discusses composite industrial poisons and the difficulty of diagnosis where there is more than one poison present. In the case of occupational poisoning the usual

method of investigation is to isolate a single toxic factor present in the raw material. Even if the factor is guilty it may be only partly the cause of the disease. Each physical symptom should be given consideration. Poisoning in hat manufacture, for instance, is usually attributed to the presence of mercury, yet in the compound used there are also appreciable parts of nitric acid and arsenic. The physical effects of such a poison would be multiform.

The determination of the relative degrees of toxicity of each ingredient in a mixture containing several poisons offers quite a complex question for analysis. The mixture of two substances may yield a new chemical body; one may affect the solubility of the other the penetrability of the cell membranes by one substance may be affected by the other; and lastly the cell becomes by saturation with one substance more or less absorptive of another. Poisons are absorbed at variable rates and their effects vary according to the rapidity and degree of poisoning.

A listof industries involving the use of poisons is given from the original article. The list also contains the process of manufacture, poisons, and remarks relative to the poisons. The tabulation gives nothing as to symptoms, diagnosis, or treatment. It does give, however, a very valuable list of poisonous by-products. Dr. Mueller regards the present practice of manufacturing "substitute products" very dangerous. On one occasion he saw oily waste products of a chem cal factory treated with perfumes and made into shoe polish, washing powders, etc.

Acetylene gas is reported as particularly poisonous both due to itself and to impurities involved in manufacture. Hydrocarbons, phosphorus and sulphur compounds, and telluric compounds are given off in the process of manufacturing acetylene gas from coal. Inperfect combustion of acetylene gas results in the formation of carbon monoxide, carbon dioxide, and phosphine. The last two are extremely poisonous, while the first is dangerous if not dispelled. Yet with all these poisons ailments resulting from work around acetylene gas are diagnosed as from acetylene poisoning, whereas they are the result of mjxed poisoning.

The diagnosis of poisoning is always difficult. Exact chemical reactions to demonstrate the presence of a poison are rare. Secondary symptoms and other accessory means are often necessary for a complete diagnosis. Three clinical histories by Dr. Mueller are related to show the diagnosis of different poisons in the same peron by other than chemical means.

In the case of mixed poisons they may have different effects upon different people, thus complicating the diagnosis. Also several poisons may have the same general symptoms such as vomiting, which is produced by a variety of poisons through the same or different causes. Diseases or alcoholism may also complicate the case and add new difficulties.

Alcohol also has particularly injurious effects in certain industries and is forbidden altogether where lead, mercury, anilin and arsenic are employed. Traumatisms are particularly dangerous to alcohol addicts.

Due to increased substitutions and adulterations it is no longer possible to consider an industry safe at the present time which was safe a few years ago; or to consider that an industry now safe will remain so. Chemical impurities are also partly responsible for some of the present day industrial poisons.

Difficulties in recognition of mixed poisonings are due to:

1. Peculiar reactions arising from a combination of poisons.
2. Limited possibilities of reaction of the human organism.
3. The difficulty of investigating the environment due to trade secrets and management opposition.

It is recommended as a remedy that there be an extension of prophylactic measures and government legislation concerning accidents and diagnosis.

Safety Committees. A. H. Young. Address before National Safety Congress, Buffalo, October, 1923.

Successful safety work requires 100 per cent not of coöperation but of participation. If we have a plant in which our plant organi-

zation, superintendents, foremen and all supervisory forces are keyed up to the limit and are wholly efficient, and yet if one single workman withholds his enthusiasm and his entire participation in safety work, we have the potentialities of accidental injury to himself or to his fellow-workmen.

It is a basic principle of psychology that we are *mildly* interested in what other people do to us or for us, and we are *intensely* interested in the thing we do ourselves.

Safety committees are almost the sole medium for securing 100 per cent participation by all of the factors that make up the industrial equation. In them, the owners of the business, the management, the supervisory forces and the workmen all can participate. Nothing can be more deadly, however, than a safety committee poorly organized and functioning as if it were an inquest rather than a safety committee. Nothing can be more destructive of safety morale than committee work so organized that suggestions requested, when made, receive no attention, or when, if they do receive attention, the full history of their consideration, adoption or rejection is not carried back to the originator of the suggestion.

First and foremost in safety work there should be a proper mechanical safeguarding, an indication by the management of its willingness to spend money and to start upon the fulfillment of its responsibility. Following that, to secure the coöperation of everyone, comes the participation of everyone in the organization of safety committees of mixed groups, not safety committees of foremen alone nor of workmen alone, but of mixed management, supervisory and workmen groups for a particular purpose.

A prerequisite to the success of the committee will be the setting of a definite periodic date for meeting, not leaving it to the chance call of a chairman, but letting it be known at the start that this safety committee meets on every second Thursday, or every Monday, or once a month on a particular date, and that nothing may interfere to prevent the meeting of that committee.

Investigation of accidents. The committee should be given power to investigate the cause of every serious accident and fix the responsibility. It should make periodic inspections, and its meetings should be meetings of record; that is, minutes should be kept, and every suggestion discussed by that committee or submitted to it should be carried on the open file until finally disposed of.

That particular point cannot be overemphasized, and, after all, it means but very little organization work. One should have a card system containing the suggestions offered by title and number, which should be kept in the open file with periodic reports until they are finally disposed of, no matter how long that may be. Safety workers who have problems and have difficulties sometimes in securing the attention of the management, find a potent force at their disposal in the mere maintenance of such a record which will indict sluggish management for inattention to items which should be cared for. A growing satisfaction will be found among the workmen in the shop in being able at all times to see the progress being made toward the successful carrying out of a suggestion.

In no place quite so much as in the conduct of safety committee meetings can the truly ideal characteristics of a safety inspector or safety engineer be shown. The success of the safety inspector rests mostly on his personality. The technique of the game is little or nothing at the start. Any man or woman of average intelligence can quickly acquire it, and in no profession, in no endeavor, can it be so quickly acquired as in safety because of the whole-hearted exchange of experiences, good, bad and indifferent, that is had in such conferences as these and among safety men.

But the most essential thing is personality and by that is meant the possession of a vision, which means almost a consecration to service in this cause, and by which there comes automatically an ability to submerge self, a willingness to step into the background, not always to carry the banner, to be anxious that full credit and more than full credit be given to workmen and to foremen and to all members of the organization.

Also, the conduct of safety committees calls for a demonstration of the tactfulness

and diplomacy and real statesmanship of a Balfour or Hughes or any of the men who are in the limelight in that respect.

Safety as morale builder. Safety is, after all, a morale builder. All of the educative influence that we bring to bear to make the naturally careless man habitually careful automatically brings with it a desire for precision of workmanship, for good housekeeping, for conservation of material as well as of life, that goes to improve the morale of the shop, and it has a definite by-product in that respect. But transcending that, the value of safety committees, a value not only in the industrial stratum but a definite political and social value, is the opportunity of bringing all of the factors in industry—owners, directors, management, supervisors, workmen—around a conference table on a wholly noncontroversial subject. It is altogether different from wages or hours or working conditions. It is altogether different from anything else we have almost, except religion. Safety has no negative values. Participation in it brings a wealth of satisfaction and a definite economic gain to each and every participant, with no losses on any side.

The management and the owners of the business make money on successful safety work. The men are saved days or suffering and their lives are saved. Here we have an opportunity that is more and more being realized by men in American management. And here in America, our captains of industry rise from the ranks, and they find that they are of the same common clay, and the workmen find that they have the same common clay. They begin to realize that each other's problems have weight, that consideration of safety items automatically can be made to include consideration of other items, and we find in safety committees, that men and management can meet together on at least one point of contact without controversy. It is the wise manager and the wise safety inspector who will see in that medium an opportunity for solving industrial ills that can be solved only by direct contact, and who can see a vision of contribution through such a medium to the political and social well being of the world.

Industrial Accident Experience Data. J. D. HACKETT. Management and Administration, November, 1923, pp. 8.

Discusses data necessary for accident information along with a general discussion of accident data. If accident study is to be of the greatest value, five quantities must be known. These are; first, the number of accidents occurring; second, the industries in which they occur; third, the causes of the accidents; fourth, the amount of exposure to hazard; and fifth, the severity of the accidents. A lost time accident is one causing disability beyond the day or turn in which the accident occurs. It is generally agreed that most accidents can be traced to human causes, carelessness or thoughtlessness.

Responsibility may be fixed by considering:

1. Failure to supply or use safety devices.
2. Failure to supply or use proper tools or appliances.
3. Violation of rules.
4. Improper acts of employer, employee or fellow worker.
5. Selection or use of improper methods.
6. Carelessness.
7. Failure to instruct or to obey instructions.
8. Trade risk.

The manager's support and coöperation from the employees are necessary to accident prevention. Methods of prevention are divided into engineerig revision, supervision, and education. One of the chief factors in prevention is organization. When an accident occurs complete records and reports as to the injured persons, the accident itself, and the time and cost must be made out.

Frequency rates are expressed in rates per 1,000,000 hours exposure. The International Association of Industrial Accident Boards and Commissions computes the rate as of 1000 hours exposure. The severity rate is computed as the number of days lost per 1000 hours of exposure. Rates for the full year worker (a hypothetical worker supposed to work 10 hours a day for 300 days a year) may be obtained by multiplying the rate given by 3. In the case of death or of permanent disability the days

lost can be estimated from a "Scale of Time Losses" of the International Association of Industrial Accident Boards and Commissions.

Accident risk is lessened with experience, to a certain extent with age, and with the understanding of English. Prevention work has saved large amounts of money in compensation and has resulted in gains of production in man hours and per hour.

Seasonal Fluctuations in Frequency of Industrial Accidents. HARRY D. KITSON AND CLAUDE CAMPBELL. The Journal of Industrial Hygiene, March, 1924, Vol. 5, No. 11, pp. 408–409.

Reports the result of investigations of the industrial boards of Indiana, Illinois, Massachusetts, Maryland, Minnesota, and Ohio for the years 1918–1921, inclusive. The data secured cover 1,892,957 accidents. From the data of each month the average number of accidents for each working day in the six states was computed. The curves uniformly show a low point in April and a steady rise to a peak in July or August followed by a steady drop until November. From November to April there are marked fluctuations.

The peak of accidents in July and August may be attributed to high temperature. This is confirmed by investigations in British munitions factories, the machine building industry, and the New York police force. The greater number of accidents in the last six months may be accounted for by the greater number of employees in the latter part of the year. Babson's index shows an increase for the latter half of the year; hence, there is likely to be an increase in the number of employees.

It is acknowledged that the use of mass data as here employed tend to hide subtle factors. The causes of the fluctuations are too numerous to mention. "There is evidence, however, pointing to the influence of temperature . . . . and to the influence of industrial activity."

The Fatigue Element in Accident Prevention. WILLIAM BAUM. National Safety News, March, 1924, Vol. 9, No. 3, pp. 32–33.

Discusses the connection between fatigue and accidents. Fatigue is the result of improper elimination of waste in the body. More work with the human element is necessary to reduce accidents. Improper lighting, poor ventilation, unnecessary noise, short lunch periods, and poor rest facilities are, in part, responsible for excessive fatigue. Wage incentive plans based on time studies and which establish the identity of interests between employer and employe will aid in reducing fatigue.

Charts are included showing that accidents are most frequent in the afternoon and toward the end of the week.

A Re-Interpretation of the Statistical Method of Army Trade Tests. ARTHUR W. KORNHAUSER. Journal of Applied Psychology, December, 1923, Vol. 7, No. 4, pp. 339–348.

The real problem in evaluating trade test items is to determine the odds that a man passing a given item is an apprentice rather than a novice, a journeyman rather than an apprentice, etc. This may be expressed by the ratio of the per cent of apprentices answering the item correctly to the per cent of novices answering it. The conventional graphic method used in the army gives a different result. If the curve is approximately a straight line it is often assumed that the steps between novice, apprentice, journeyman and expert are equal, whereas using the ratios the differentiation between novice and apprentice is considerably better than that between the other grades. It is suggested that an ideal method should comprise either classification of questions into different levels of difficulty (analogous to Binet age groups) or at each level questions divided into classes which correlate low with other classes.

Scientific Method in Constructing Psychological Tests for Business. A. W. KORNHAUSER. The Journal of Political Economy, June, 1923, Vol. 31, No. 3, pp. 401–432.

Of special interest in this article is a plea for the application of the scientific method of verification to all employment procedures. The specific application dis-

cussed is to psychological tests, but the utility of general applicability of this method in business is definitely stated.

The fundamentals of test construction and standardization are:

1. Know the requirements of the job. This may be done: (*a*) by a job analysis, which, at this particular stage of psychological development is not entirely practicable; or (*b*) by sufficient familiarity with the job to afford the expert a basis for making wise guesses as to the sort of test that will work.

2. Choose or devise tests to be tried out. This is to be done by scientific "guesses" or hypotheses. The relation the test bears to the job may be one of the following: (*a*) samples of the job, (*b*) devices for measuring the separate abilities used in the job, (*c*) devices for measuring the central or outstanding ability used in the job, (*d*) imitative repetitions of the job, (*e*) devices which have no apparent or obvious relation to the job.

3. Obtain the scores made on the selected tests by individuals whose ability in the job is ascertainable. This may be done by trying out the tests on applicants or on workers already employed in the occupation, the essential being that all experimental conditions shall be as nearly like conditions under which the tests are to be used as is possible.

4. Obtain some measure of the ability on the job of the individuals who were tested. The three principal measures in use are: (*a*) production output, (*b*) supervisors' estimates or "ratings," and (*c*) length of service or period of employment.

5. Determine the agreement existing between test scores and ability on the job. This is a problem of working out quantitatively the relation existing between the test scores made by individuals and the corresponding efficiency ratings of those individuals. The two principal ways of determining this statistically are: (*a*) correlation method, (*b*) percentage comparisons between groups of poorer and better workers.

6. Set test standards for the acceptance, rejection, or classification of applicants. This means the setting of a critical score within the limits of which an applicant's score on the tests must fall before he is selected for this particular job.

The application of these principles will not settle once and forever the judging of men's abilities. The best we can do is to "use whatever scientific methods there are available, add to these whatever common sense and sound judgment we can muster and be ready to revise our judgments whenever new evidence appears."

The Social and Geographical Distribution of Intelligence in Northumberland. JAMES DUFF AND GODFREY H. THOMSON. British Journal of Psychology, October, 1923, Vol. 14, Part 2, pp. 192–198.

Reports the I.Q.'s of 13,419 children examined by means of a group intelligence test classified in accordance with the occupations of the fathers and with reference to geographical distribution. There is a steady change in average I.Q. with changes in social standing as represented by the occupations of the fathers. There are more high I.Q.'s among the children of "brain-workers" than among those of "hand-workers." However, in spite of the steady change in average I.Q., there is little accuracy in prediction from occupation to I. Q. in individual cases, and much overlapping. The analysis on the basis of geographical distribution shows a superiority of city children over rural children and a low frequency of high I.Q.'s in the coalfields. The superiority of the residential suburbs appears, however, to be due to selection, by the operation of the social ladder, from the surrounding districts.

A Contribution to the Study of Mental and Physical Measurements in Normal Children. KATHARINE MURDOCH AND LOUIS R. SULLIVAN. American Physical Education Review, May and June, 1923, pp. 13.

A study of the correlation between the mental and physical attributes of children. Literature on the subject indicates a marked correlation in the cases of defectives and subnormal children.

The tests in this case were made on over 600 pupils of the Punahou School, Hawaii.

The subjects were children of old American, British, Scandinavian, and German stock, all white. The children of the first 12 grades were tested. The mental ages for I. Q.'s were obtained from scores of the Otis Primary Test, National Intelligence Test, form 1, scales A and B, and the Terman Group Tests for grades 1 to 3, 3 to 9, and 9 to 12 respectively. Ages were used to the nearest month. To obtain an average I.Q. 6 points were added to the I.Q. resulting from the Terman Test, and 12 points were subtracted from the Otis Test I.Q. Physical measurements were height to nearest centimeter, weight with indoor clothing, but without shoes, and diameter of head. The head diameter was taken as the average of the length and width of the head to the nearest millimeter.

The I.Q.'s varied from 60 to 160. Girls had a slightly higher average than boys, but the boys' averages were more scattered. A summary of the results shows a slight but positive correlation between intelligence and weight, stature, and head diameter. The correlation for head diameter was larger than for the other two. No differences appeared as regards sex. Correlations were higher for those below 100 I. Q. than for those above 100. There was a slight indication of decreasing correlation with increase of age.

It is concluded from the study that although there is a small but positive correlation—largest in subnormal children—between physical characteristics and intelligence, it is too small to be of practical value at present.

Educational and Vocational Guidance in the Providence Public Schools. RICHARD D. ALLEN. The National Vocational Guidance Association Bulletin, January, 1924, Vol. 2, No. 4, pp. 74–92.

Account of an elaborate vocational guidance program, begun in 1917, by a bureau whose efforts have been:

"1. To prevent hasty and unwise choices of occupations, too early elimination from school, and unwise choice of studies.

2. To insure to each child the equality of opportunity provided in the public schools by adjustment to individual needs.

3. To assist able, worthy and ambitious pupils under financial difficulties to continue their education.

4. To advise pupils concerning opportunities for further education and training beyond that which is provided in the public schools, or concerning occupations and the requirements for success and advancement in them."

Among the problems specifically attacked were the development of vocational training schools, methods of accelerating bright students and a proof to the city of the importance of this individual attention, providing teachers with accurate and sufficient vocational information, the advertisement of educational opportunities—largely through posters devised by high school students,—the training and selection of voluntary advisers for high school students, special courses for slow pupils (including try-out shops), attention to speech defects and the development of an elaborate personnel card providing for data of many kinds including intellectual, educational and social measures of personality.

The Function of Vocational Guidance in a Woman's College. IVA LOWTHER PETERS. News-Bulletin, Bureau of Vocational Information, December 15, 1923, pp. 5–7.

From the time citizenship was granted to women the freer entrance of the college woman into community life was inevitable. Instead of haphazard following of the time worn teaching profession, into which 50 per cent from Goucher College still go immediately after graduation, the tendency is to prepare more specifically for a variety of professions. Employers in the fields of social work and education are requiring professional training. The vocational guidance movement in the college involves the collection of vocational information, the understanding on the part of an expert of the rate of absorption of college graduates in the newer occupations, the recognition of pre-professional work for many occupations and the continued guidance of students with reference to these requirements throughout their course of training and for the purpose of the vocational incentive in work. Describes an experi-

ment at Goucher College, of sending two hundred students each year into part time (hourly paid) jobs in libraries, museums, stores, settlements, etc.

Fact and Fable in Character Analysis. KNIGHT DUNLAP. The Annals, November, 1923, Vol. 110, No. 199, pp. 74–80.

Discusses the different bases of character analysis. Besides various systems—the selling of which it a very profitable business—the psychologists have been busy in the elaboration of mental and aptitude tests. The work of the psychologists is painstakingly slow, but just as sure. There is no system of tests good for all purposes, and tests for different purposes must be given by trained men who are proficient in the particular test being given. It takes years to perfect a test and train men.

Hence the demand for short cuts, and the arrival of trainers of "character analysts." The systems in vogue are of two groups. One is based on physiological or psychophysiological traits such as handwriting. The other is based on anatomical traits such as palmistry and phrenology. Anatomical features are almost entirely based on heredity. Color, size, shape, etc., are influenced but slightly by other factors. Hence the latter school depends entirely on heredity. Genetics has been unable to certify to any linking of anatomical and mental characteristics. Mental characteristics are the product of environment. A Chinaman in New York is very similar to the Anglo Saxon in mental characteristics. Some mental characteristics, such as feeblemindedness, may be inherited. The anatomical character analysis has no basis for fact. There is need, however, for a scientific investigation for possible linkages between mental and certain anatomical traits.

The problem involved in considering handwriting as a basis for character analysis depends on the queston of whether traits in this performance are associated with those traits in other important mental performances. There is no reason to believe that these do not exist, although none have been found. In the same class with handwriting are bodily movements, postures, facial expressions, etc. All these are expressive. A habit of expression is frequently an index to a mental habit. One recognizes an individual by his walk, for example.

Some work has been done on handwriting, but no results have been obtained. Methods for studying expression have been perfected but detailed results are yet to come.

We decide on an individual's characteristics in spite of a lack of scientific information. We make these decisions on the basis of our experience and we cannot define or analyze the expressions involved.

Today there is no system of "character analysis" worth while.

A good system may sometime be developed on a physiological basis,—not on an anatomical basis. The man of experience in judging men will do much better if he is not hampered by a system.